

SEQUENCE LISTING

<110> Jander, Georg

Baerson, Scott R

Durrett, Timothy P

<120> Plants with Imidazolinone-Resistant ALS

<130> 38-10 (15820) B

<150> US 60/257,480

<151> 2000-12-21

<160> 38

<170> PatentIn version 3.1

<210> 1

<211> 2013

<212> DNA

<213> *Arabidopsis thaliana* ecotype Columbia

<400> 1

atggcggcgg	caacaacaac	aacaacaaca	tcttcttcga	tctccttctc	caccaaacca	60
tctccttcct	cctccaaatc	accattacca	atctccagat	tctccctccc	attctcccta	120
aaccccaaca	aatcatcctc	ctcctccgc	cgccgcggta	tcaaatccag	ctctccctcc	180
tccatctccg	ccgtgctcaa	cacaaccacc	aatgtcacaa	ccactccctc	tccaacccaaa	240
cctaccaaac	ccgaaacatt	catctccga	ttcgctccag	atcaaccccg	caaaggcgct	300
gatatcctcg	tcgaagcttt	agaacgtcaa	ggcgtagaaa	ccgtattcgc	ttaccctgga	360
ggtacatcaa	tggagattca	ccaagcctta	acccgcttctt	cctcaatccg	taacgtcctt	420

cctcgtcacg aacaaggagg tgtattcgca gcagaaggat acgctcgatc ctcaggtaaa	480
ccaggtatct gtatagccac ttccaggtccc ggagctacaa atctcgtag cggtttagcc	540
gatgcgttgt tagatagtgt tcctcttgcata gcaatcacag gacaagtcgg tcgtcgatg	600
attggtagacat atgcgtttca agagactccg attgttggagg taacgcgttc gattacgaag	660
cataactatc ttgtgatgga tggtgaagat atcccttagga ttattgagga agctttctt	720
ttagctactt ctggtagacc tggacctgtt ttgggtgatg ttccctaaaga tattcaacaa	780
cagcttgcga ttccctaaattt ggaacaggct atgagattac ctggttatata gtctaggatg	840
cctaaacctc cggaaagattc tcattggag cagattgtt ggttggattc tgagtctaag	900
aagcctgtgt tttatgttgg tggtgggtt ttgaattcta gcgttgcattt gggtaggttt	960
gtttagcttta cggggatccc tggtgcgagt acgttgcattt ggctgggatc ttatccttgt	1020
gatgtgagt tgctgttaca tatgtttggaa atgcattggaa ctgtgtatgc aaattacgct	1080
gtggagcata gtgattttttt gttggcggtt ggggttaaggt ttgtatgtcg tgacacgggt	1140
aagcttgagg cttttgttag tagggctaaatg attgttgcata ttgtatattga ctcggctgag	1200
attggaaaga ataagactcc tcattgttgcgtt gttttttttt atgttaagct ggctttgcaaa	1260
gggatgaata aggttcttgcata gaaacagaag tttccgttgcata gctttaagac gtttgggaa	1320
gctattcctc cacagtatgc gattaaggcgtt cttgtatgtt tgactgtatgg aaaagccata	1380
ataagtactg gtgtcgggca acatcaaattt tggggcgccgc agttctacaa ttacaagaaa	1440
ccaaggcagt ggctatcatc aggaggcattt ggagctatgg gattttggact tcctgctgcg	1500
attggagcgt ctgttgcata ccctgtatgcg atagttgtgg atattgacgg agatggaaac	1560
tttataatgtt atgtgcaaga gcttagccact attcgatgtt agaatcttcc agtgaaggtt	1620
cttttattaa acaaccagca tcttggcatg gttatgcata gggaaagatcg gttctacaaa	1680
gctaaaccgag ctcacacatt tctcggttgcgtt ccggctcagg aggacgagat attccccaa	1740
atgttgcgtt ttgcagcagc ttgcggattt ccagcggcga ggggtacaaa gaaaggcagat	1800
ctccgagaag ctattcagac aatgttgcgtt acaccaggac cttacctgtt ggatgttgcgtt	1860
tgtccgcacc aagaacatgt gttgccatgc atccccggat gttggactttt caacgtatgc	1920
ataacgaaag gagatggcccg gattaaatac tga	1980
	2013

<210> 2
 <211> 2013
 <212> DNA
 <213> *Arabidopsis thaliana* ecotype Columbia

<400> 2
 atggcggcgg caacaacaac aacaacaaca tcttcttcga tctccttctc caccaaacca 60
 tctccttcct cctccaaatc accattacca atctccagat tctccctccc attctcccta 120
 aaccccaaca aatcatcctc ctcctccgc cgccgcggta tcaaatccag ctctccctcc 180
 tccatctccg ccgtgctcaa cacaaccacc aatgtcacaa ccactccctc tccaacccaa 240
 cctaccaaaac ccgaaacatt catctccga ttgcgtccag atcaaccccg caaaggcgct 300
 gatatcctcg tcgaagcttt agaacgtcaa ggcgtagaaa ccgtattcgc ttaccctgga 360
 ggtgcataa tggagattca ccaagcctta acccgctt cctcaatccg taacgtcctt 420
 cctcgtcacg aacaaggagg tgtattcgca gcagaaggat acgctcgatc ctcaggtaaa 480
 ccaggtatct gtatagccac ttcaaggccc ggagctacaa atctcgtagt cggattagcc 540
 gatgcgttgt tagatagtgt tcctcttgta gcaatcacag gacaagtccc tcgtcgtatg 600
 attggtacag atgtgtttca agagactccg attgttgggg taacgcgttc gattacgaag 660
 cataactatc ttgtgatgga tggtaagat atcccttagga ttattgagga agctttctt 720
 ttagctactt ctggtagacc tggacctgtt ttgggtgatg ttccctaaaga tattcaacaa 780
 cagcttgcga ttccataattt ggaacaggct atgagattac ctggttatat gtctaggatg 840
 cctaaacctc cggaaagattc tcattggag cagattgtta ggttggatttc tgagtctaag 900
 aagcctgtgt tgtatgttgg tgggttgtt ttgaattcta gcgtatgaa gggtaggttt 960
 gttgagctta cggggatccc tggcgaggt acgttggatgg ggctgggatc ttatccttgt 1020
 gatgtatgtgt tgctgttaca tatgttggaa atgcattggaa ctgtgtatgc aaattacgct 1080
 gtggagcata gtgattttttt gttggcggtt gggtaaggt ttgatgtatcg tgacgggtt 1140
 aagcttgagg cttttgttag tagggctaaatg attgttgcata ttgatattga ctggctgag 1200
 attggaaaga ataagactcc tcattgtgtct gtgtgtgggt atgttaagct ggctttgcaa 1260
 gggatgaata aggttcttga gaaccgagcg gaggagctta agcttgattt tggagtttgg 1320
 aggaatgagt tgaacgtaca gaaacagaag ttccgttga gcttaagac gtttggggaa 1380

gctattcctc cacagtatgc gattaaggc cttgatgagt tgactgatgg aaaagccata	1440
ataagtactg gtgtcggca acatcaaatg tggcgccgc agttctacaa ttacaagaaa	1500
ccaaggcagt ggctatcatc aggaggcatt ggagctatgg gatttgact tcctgctg	1560
attggagcgt ctgttgctaa ccctgatgctg atagttgtgg atattgacgg agatggaagc	1620
tttataatga atgtgcaaga gctagccact attcgtgttag agaatcttcc agtgaaggta	1680
cttttattaa acaaccagca tcttggcatg gttatgcaat ggaaagatcg gttctacaaa	1740
gctaaccgag ctcacacatt tctcgggat ccggctcagg aggacgagat attccgaaac	1800
atgttgctgt ttgcagcagc ttgcggatt ccagcggcga gggtgacaaa gaaagcagat	1860
ctccgagaag ctattcagac aatgctggat acaccaggac cttacctgtt ggatgtgatt	1920
tgtccgcacc aagaacatgt gttgccatg atcccgagtg gtggcacttt caacgatgtc	1980
ataacggaag gagatggccg gattaaatac tga	2013

<210> 3

<211> 670

<212> PRT

<213> *Arabidopsis thaliana* ecotype Columbia

<400> 3

Met Ala Ala Ala Thr Thr Thr Thr Ser Ser Ser Ser Ile Ser Phe			
1	5	10	15

Ser Thr Lys Pro Ser Pro Ser Ser Lys Ser Pro Leu Pro Ile Ser		
20	25	30

Arg Phe Ser Leu Pro Phe Ser Leu Asn Pro Asn Lys Ser Ser Ser		
35	40	45

Ser Arg Arg Arg Gly Ile Lys Ser Ser Ser Pro Ser Ser Ile Ser Ala		
50	55	60

Val Leu Asn Thr Thr Asn Val Thr Thr Pro Ser Pro Thr Lys			
65	70	75	80

Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro		
85	90	95

Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val		
100	105	110

Glu Thr Val Phe Ala Tyr Pro Gly Gly Thr Ser Met Glu Ile His Gln

115

120

125

Ala Leu Thr Arg Ser Ser Ser Ile Arg Asn Val Leu Pro Arg His Glu
 130 135 140

Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys
 145 150 155 160

Pro Gly Ile Cys Ile Ala Thr Ser Gly Pro Gly Ala Thr Asn Leu Val
 165 170 175

Ser Gly Leu Ala Asp Ala Leu Leu Asp Ser Val Pro Leu Val Ala Ile
 180 185 190

Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala Phe Gln Glu
 195 200 205

Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr Leu
 210 215 220

Val Met Asp Val Glu Asp Ile Pro Arg Ile Ile Glu Glu Ala Phe Phe
 225 230 235 240

Leu Ala Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro Lys
 245 250 255

Asp Ile Gln Gln Gln Leu Ala Ile Pro Asn Trp Glu Gln Ala Met Arg
 260 265 270

Leu Pro Gly Tyr Met Ser Arg Met Pro Lys Pro Pro Glu Asp Ser His
 275 280 285

Leu Glu Gln Ile Val Arg Leu Ile Ser Glu Ser Lys Lys Pro Val Leu
 290 295 300

Tyr Val Gly Gly Gly Cys Leu Asn Ser Ser Asp Glu Leu Gly Arg Phe
 305 310 315 320

Val Glu Leu Thr Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly
 325 330 335

Ser Tyr Pro Cys Asp Asp Glu Leu Ser Leu His Met Leu Gly Met His
 340 345 350

Gly Thr Val Tyr Ala Asn Tyr Ala Val Glu His Ser Asp Leu Leu Leu
 355 360 365

Ala Phe Gly Val Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala
 370 375 380

Phe Ala Ser Arg Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu
 385 390 395 400

Ile Gly Lys Asn Lys Thr Pro His Val Ser Val Cys Gly Asp Val Lys
 405 410 415

Leu Ala Leu Gln Gly Met Asn Lys Val Leu Glu Asn Arg Ala Glu Glu
 420 425 430
 Leu Lys Leu Asp Phe Gly Val Trp Arg Asn Glu Leu Asn Val Gln Lys
 435 440 445
 Gln Lys Phe Pro Leu Ser Phe Lys Thr Phe Gly Glu Ala Ile Pro Pro
 450 455 460
 Gln Tyr Ala Ile Lys Val Leu Asp Glu Leu Thr Asp Gly Lys Ala Ile
 465 470 475 480
 Ile Ser Thr Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr
 485 490 495
 Asn Tyr Lys Lys Pro Arg Gln Trp Leu Ser Ser Gly Gly Leu Gly Ala
 500 505 510
 Met Gly Phe Gly Leu Pro Ala Ala Ile Gly Ala Ser Val Ala Asn Pro
 515 520 525
 Asp Ala Ile Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn
 530 535 540
 Val Gln Glu Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Val
 545 550 555 560
 Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Glu Asp
 565 570 575
 Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Phe Leu Gly Asp Pro Ala
 580 585 590
 Gln Glu Asp Glu Ile Phe Pro Asn Met Leu Leu Phe Ala Ala Ala Cys
 595 600 605
 Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Ala Asp Leu Arg Glu Ala
 610 615 620
 Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile
 625 630 635 640
 Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr
 645 650 655
 Phe Asn Asp Val Ile Thr Glu Gly Asp Gly Arg Ile Lys Tyr
 660 665 670
 <210> 4
 <211> 670
 <212> PRT
 <213> Arabidopsis thaliana ecotype Columbia

<400> 4

Met Ala Ala Ala Thr Thr Thr Thr Ser Ser Ser Ser Ile Ser Phe
1 5 10 15

Ser Thr Lys Pro Ser Pro Ser Ser Ser Lys Ser Pro Leu Pro Ile Ser
20 25 30

Arg Phe Ser Leu Pro Phe Ser Leu Asn Pro Asn Lys Ser Ser Ser Ser
35 40 45

Ser Arg Arg Arg Gly Ile Lys Ser Ser Ser Pro Ser Ser Ile Ser Ala
50 55 60

Val Leu Asn Thr Thr Thr Asn Val Thr Thr Thr Pro Ser Pro Thr Lys
65 70 75 80

Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro
85 90 95

Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val
100 105 110

Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln
115 120 125

Ala Leu Thr Arg Ser Ser Ser Ile Arg Asn Val Leu Pro Arg His Glu
130 135 140

Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys
145 150 155 160

Pro Gly Ile Cys Ile Ala Thr Ser Gly Pro Gly Ala Thr Asn Leu Val
165 170 175

Ser Gly Leu Ala Asp Ala Leu Asp Ser Val Pro Leu Val Ala Ile
180 185 190

Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Val Phe Gln Glu
195 200 205

Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr Leu
210 215 220

Val Met Asp Val Glu Asp Ile Pro Arg Ile Ile Glu Glu Ala Phe Phe
225 230 235 240

Leu Ala Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro Lys
245 250 255

Asp Ile Gln Gln Gln Leu Ala Ile Pro Asn Trp Glu Gln Ala Met Arg
260 265 270

Leu Pro Gly Tyr Met Ser Arg Met Pro Lys Pro Pro Glu Asp Ser His
275 280 285

Leu Glu Gln Ile Val Arg Leu Ile Ser Glu Ser Lys Lys Pro Val Leu
290 295 300

Tyr Val Gly Gly Cys Leu Asn Ser Ser Asp Glu Leu Gly Arg Phe
305 310 315 320

Val Glu Leu Thr Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly
325 330 335

Ser Tyr Pro Cys Asp Asp Glu Leu Ser Leu His Met Leu Gly Met His
340 345 350

Gly Thr Val Tyr Ala Asn Tyr Ala Val Glu His Ser Asp Leu Leu Leu
355 360 365

Ala Phe Gly Val Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala
370 375 380

Phe Ala Ser Arg Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu
385 390 395 400

Ile Gly Lys Asn Lys Thr Pro His Val Ser Val Cys Gly Asp Val Lys
405 410 415

Leu Ala Leu Gln Gly Met Asn Lys Val Leu Glu Asn Arg Ala Glu Glu
420 425 430

Leu Lys Leu Asp Phe Gly Val Trp Arg Asn Glu Leu Asn Val Gln Lys
435 440 445

Gln Lys Phe Pro Leu Ser Phe Lys Thr Phe Gly Glu Ala Ile Pro Pro
450 455 460

Gln Tyr Ala Ile Lys Val Leu Asp Glu Leu Thr Asp Gly Lys Ala Ile
465 470 475 480

Ile Ser Thr Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr
485 490 495

Asn Tyr Lys Lys Pro Arg Gln Trp Leu Ser Ser Gly Gly Leu Gly Ala
500 505 510

Met Gly Phe Gly Leu Pro Ala Ala Ile Gly Ala Ser Val Ala Asn Pro
515 520 525

Asp Ala Ile Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn
530 535 540

Val Gln Glu Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Val
545 550 555 560

Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Glu Asp
565 570 575

Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Phe Leu Gly Asp Pro Ala

580 585 590
Gln Glu Asp Glu Ile Phe Pro Asn Met Leu Leu Phe Ala Ala Ala Cys
595 600 605
Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Ala Asp Leu Arg Glu Ala
610 615 620
Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile
625 630 635 640
Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr
645 650 655
Phe Asn Asp Val Ile Thr Glu Gly Asp Gly Arg Ile Lys Tyr
660 665 670

<210> 5

<211> 38

<212> DNA

<213> Arabidopsis thaliana

<400> 5

tgtaaaacga cggccagtct tgtatccatt ctcttaac 38

<210> 6

<211> 38

<212> DNA

<213> Arabidopsis thaliana

<400> 6

cagggaaacag ctatgaccgg cggagatgga ggagggag 38

<210> 7

<211> 38

<212> DNA

<213> Arabidopsis thaliana

<400> 7

tgtaaaacga cggccagttc acaagtctct tcttcttc 38

<210> 8
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 8
cagggaaacag ctagaccca ctttcgtt cgtgacga 38

<210> 9
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 9
tgtaaaacga cggccagtgt gctcaacaca accaccaa 38

<210> 10
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 10
cagggaaacacg ctatgaccat atcttcaaca tccatcac 38

<210> 11
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 11
tgtaaaacga cggccagttt ttcqcaqcaq aaggatac 38

<210> 12
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 12
cagggaaacag ctatgaccgc tagaattcaa acaaccac 38

<210> 13
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 13
tgtaaaaacga cggccagtcc ctaggattat tgaggaag 38

<210> 14
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 14
cagggaaacag ctatgaccag tcaatatcaa tatgaaca 38

<210> 15
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 15
tgtaaaaacga cggccagtga tgaattgggt aggtttgt 38

<210> 16
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 16
cagggaaacag ctaggaccat tatggctttt ccatcagt

38

<210> 17
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 17
tgtaaaacga cggccagtcg gctgagattt ggaagaat

38

<210> 18
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 18
cagggaaacag ctaggaccgt ttaataaaag tacttca

38

<210> 19
<211> 38
<212> DNA
<213> Arabidopsis thaliana

<400> 19
tgtaaaacga cggccagtaa gtactgggtgt cgggcaac

38

<210> 20
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 20
cagggaaacag ctatgaccac acatgttctt ggtgcgga 38

<210> 21
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 21
tgtaaaacga cggccagtaa ccagcatctt ggcatgg 38

<210> 22
<211> 38
<212> DNA
<213> *Arabidopsis thaliana*

<400> 22
cagggaaacag ctatgacctg aaagaaaagga aaccaaac 38

<210> 23
<211> 50
<212> DNA
<213> *Arabidopsis thaliana*

<400> 23
ggggccccggg ccgcagtc tc atttttaaac aaatcatgtt cacaagtctc 50

<210> 24
 <211> 44
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 24
 gggccctgc agtctcttag tatttaatcc ggccatctcc ttcc 44

<210> 25
 <211> 2013
 <212> DNA
 <213> *Arabidopsis thaliana* ecotype Landsberg erecta

<400> 25
 atggcggcgg caacaacaac aacaacaaca tcttcttcga ttccttctc caccacca 60
 ttccttcct ctcctaaatc accattacca atctccagat ttccttccc atttcctta 120
 aaccccaaca aatcatcctc ctcctccgc cgccgcggta tcaaattccag ctccctcc 180
 tccatctccg ccgtgctcaa cacaaccacc aatgtcaca 240
 ccactccctc tccaaccaaa
 cctaccaa 300
 ac cccaaacatt catctccga ttgcgtccag atcaaccccg caaggcgct 360
 gatattcctcg tcgaagcttt agaacgtcaa ggcgtagaaa ccgtattcgc ttaccctgga 420
 ggtgcataa tggagattca ccaaggctta acccgcttt cctcaatccg taacgtcctt 480
 cctcgtcacg aacaaggagg tgtattcga gcagaaggat acgctcgatc ctcaggtaaa 540
 ccaggtatct gtatagccac ttcaaggccc ggagctacaa atctcgtagt cgattagcc 600
 gatgcgttgt tagatagtgt tcctttgtta gcaatcacag gacaagtccc tcgtcgatg 660
 attggtagac 660
 atgtgtttca agagactccg attgttgggg taacgcgttc gattacgaag
 cataactatc 720
 ttgtgatgga tggtaagat atcccttagga ttattgagga agctttctt
 tttagctactt 780
 ctggtagacc tggacctgtt ttgggtgatg ttccctaaaga tattcaacaa
 cagcttgcga 840
 ttccctaattt ggaacaggct atgagattac ctggttatgt gtctaggatg
 cctaaacctc 900
 cggaaaggattc tcatttggag cagattgtta ggttggatttc tgagtctaag
 aagcctgtgt 960
 tgtatgttgg tgggtgggtt ttgaattcta gcgtatgaaatt gggtaggtt
 gttgagctta 1020
 cggggatccc tgggtggatgc acgttgcgtt ggctggatc ttatccttgc
 gatgtatgagt tgcgttaca tatgcttggaa atgcattggaa cgggttatgc gaattacgct
 gtggagcata 1080
 gtgatttgg tgggtggatgc cgtcacgggt 1140

aagcttgagg	cttttgc tag	tagggctaag	attgttcata	ttgatattga	ctctgctgag	1200
attgggaaga	ataagactcc	tcatgtgtct	gtgtgtggtg	atgtcaagct	ggctttgcaa	1260
gggatgaata	aggttcttga	gaaccgagct	gaggagctta	agcttgattt	tggagtttgg	1320
aggaatgagt	tgaacgtaca	gaaacagaag	tttccgttga	gcttaagac	gtttgggaa	1380
gctattcctc	cacagtatgc	gattaaggc	cttgatgagt	tgactgatgg	aaaagccatt	1440
ataagtactg	gtgtcgggca	acatcaa atg	tggcgccgc	agttctacaa	ttacaagaag	1500
ccaaggcagt	ggctatcatc	aggaggc	cttgcatt	gtttggact	tcctgctgcc	1560
attggagcgt	ctgttgc taa	ccctgatgca	atagttgtgg	atattgacgg	agatggaagc	1620
tttataatga	atgtgcaaga	gctggccaca	atccgtgt	agcaacttcc	agtgaagata	1680
ctcttattaa	acaaccagca	tcttggcatg	gttatgcaat	ggaaagatcg	gttctacaag	1740
gctaaccgag	ctcacacatt	tctcgggat	ccggctcagg	aggacgagat	attcccgaac	1800
atgttgcgt	ttgcaggc	ttgcggatt	ccagcggcga	gggtgacaaa	gaaagcagat	1860
ctccgagaag	ctattcagac	aatgctggat	acaccaggac	cttacctgtt	ggatgtgatt	1920
tgtccgcacc	aagaacatgt	gttgcgc	atccc	gtggcacttt	caacgatgtc	1980
ataacggaag	gagatggccg	gattaaatac	tga			2013

<210> 26

<211> 670

<212> PRT

<213> *Arabidopsis thaliana* ecotype Landsberg erecta

<400> 26

Met	Ala	Ala	Ala	Thr	Thr	Thr	Thr	Thr	Ser	Ser	Ser	Ile	Ser	Phe
1				5				10				15		

Ser	Thr	Lys	Pro	Ser	Pro	Ser	Ser	Ser	Lys	Ser	Pro	Leu	Pro	Ile	Ser
		20						25				30			

Arg	Phe	Ser	Leu	Pro	Phe	Ser	Leu	Asn	Pro	Asn	Lys	Ser	Ser	Ser	Ser
	35						40				45				

Ser	Arg	Arg	Arg	Gly	Ile	Lys	Ser	Ser	Ser	Pro	Ser	Ser	Ile	Ser	Ala
	50				55				60						

Val Leu Asn Thr Thr Asn Val Thr Thr Pro Ser Pro Thr Lys

65	70	75	80
Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro			
85	90	95	
Arg Lys Gly Ala Asp Ile Leu Val Glu Ala Leu Glu Arg Gln Gly Val			
100	105	110	
Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala Ser Met Glu Ile His Gln			
115	120	125	
Ala Leu Thr Arg Ser Ser Ile Arg Asn Val Leu Pro Arg His Glu			
130	135	140	
Gln Gly Gly Val Phe Ala Ala Glu Gly Tyr Ala Arg Ser Ser Gly Lys			
145	150	155	160
Pro Gly Ile Cys Ile Ala Thr Ser Gly Pro Gly Ala Thr Asn Leu Val			
165	170	175	
Ser Gly Leu Ala Asp Ala Leu Leu Asp Ser Val Pro Leu Val Ala Ile			
180	185	190	
Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Val Phe Gln Glu			
195	200	205	
Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys His Asn Tyr Leu			
210	215	220	
Val Met Asp Val Glu Asp Ile Pro Arg Ile Ile Glu Glu Ala Phe Phe			
225	230	235	240
Leu Ala Thr Ser Gly Arg Pro Gly Pro Val Leu Val Asp Val Pro Lys			
245	250	255	
Asp Ile Gln Gln Gln Leu Ala Ile Pro Asn Trp Glu Gln Ala Met Arg			
260	265	270	
Leu Pro Gly Tyr Met Ser Arg Met Pro Lys Pro Pro Glu Asp Ser His			
275	280	285	
Leu Glu Gln Ile Val Arg Leu Ile Ser Glu Ser Lys Lys Pro Val Leu			
290	295	300	
Tyr Val Gly Gly Cys Leu Asn Ser Ser Asp Glu Leu Gly Arg Phe			
305	310	315	320
Val Glu Leu Thr Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly			
325	330	335	
Ser Tyr Pro Cys Asp Asp Glu Leu Ser Leu His Met Leu Gly Met His			
340	345	350	
Gly Thr Val Tyr Ala Asn Tyr Ala Val Glu His Ser Asp Leu Leu Leu			
355	360	365	
Ala Phe Gly Val Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala			

370

375

380

Phe Ala Ser Arg Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu
 385 390 395 400

Ile Gly Lys Asn Lys Thr Pro His Val Ser Val Cys Gly Asp Val Lys
 405 410 415

Leu Ala Leu Gln Gly Met Asn Lys Val Leu Glu Asn Arg Ala Glu Glu
 420 425 430

Leu Lys Leu Asp Phe Gly Val Trp Arg Asn Glu Leu Asn Val Gln Lys
 435 440 445

Gln Lys Phe Pro Leu Ser Phe Lys Thr Phe Gly Glu Ala Ile Pro Pro
 450 455 460

Gln Tyr Ala Ile Lys Val Leu Asp Glu Leu Thr Asp Gly Lys Ala Ile
 465 470 475 480

Ile Ser Thr Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr
 485 490 495

Asn Tyr Lys Lys Pro Arg Gln Trp Leu Ser Ser Gly Gly Leu Gly Ala
 500 505 510

Met Gly Phe Gly Leu Pro Ala Ala Ile Gly Ala Ser Val Ala Asn Pro
 515 520 525

Asp Ala Ile Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn
 530 535 540

Val Gln Glu Leu Ala Thr Ile Arg Val Glu Gln Leu Pro Val Lys Ile
 545 550 555 560

Leu Leu Leu Asn Asn Gln His Leu Gly Met Val Met Gln Trp Glu Asp
 565 570 575

Arg Phe Tyr Lys Ala Asn Arg Ala His Thr Phe Leu Gly Asp Pro Ala
 580 585 590

Gln Glu Asp Glu Ile Phe Pro Asn Met Leu Leu Phe Ala Ala Ala Cys
 595 600 605

Gly Ile Pro Ala Ala Arg Val Thr Lys Lys Ala Asp Leu Arg Glu Ala
 610 615 620

Ile Gln Thr Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile
 625 630 635 640

Cys Pro His Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Gly Thr
 645 650 655

Phe Asn Asp Val Ile Thr Glu Gly Asp Gly Arg Ile Lys Tyr
 660 665 670

<210> 27
<211> 31
<212> PRT
<213> *Arabidopsis thaliana*

<400> 27

Leu Glu Arg Gln Gly Val Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Ser Ser Ile Arg
20 25 30

<210> 28

<211> 31
<212> PRT
<213> *Brassica napus*

<400> 28

Leu Glu Arg Gln Gly Val Glu Thr Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Ser Thr Ile Arg
20 25 30

<210> 29

<211> 31
<212> PRT
<213> *Gossypium hirsutum*

<400> 29

Leu Glu Arg Glu Gly Val Lys Asp Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Lys Ile Ile Arg

20

25

30

<210> 30
<211> 31

<212> PRT

<213> Nicotiana tabacum

<400> 30

Leu Glu Arg Glu Gly Val Lys Asp Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Lys Ile Ile Arg
20 25 30

<210> 31

<211> 31

<212> PRT

<213> Glycine max

<400> 31

Leu Glu Arg Gln Gly Val Thr Asp Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Ser Ser Ile Arg
20 25 30

<210> 32

<211> 31

<212> PRT

<213> Zea mays

<400> 32

Leu Glu Arg Cys Gly Val Arg Asp Val Phe Ala Tyr Pro Gly Gly Ala
1 5 10 15

Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Pro Val Ile Ala
20 25 30

<210> 33

<211> 31

<212> PRT

<213> *Arabidopsis thaliana*

<400> 33

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

<210> 34

<211> 31

<212> PRT

<213> *Brassica napus*

<400> 34

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

<210> 35

<211> 31

<212> PRT

<213> *Gossypium hirsutum*

<400> 35

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

<210> 36
<211> 31

<212> PRT

<213> Nicotiana tabacum

<400> 36

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

<210> 37

<211> 31

<212> PRT

<213> Glycine max

<400> 37

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

<210> 38

<211> 31

<212> PRT

<213> Zea mays

<400> 38

Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met Ile Gly Thr Asp Ala
1 5 10 15

Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg Ser Ile Thr Lys
20 25 30

Arg¹ Ile² Thr³ Gly⁴ Gln⁵ Val⁶ Pro⁷ Arg⁸ Arg⁹ Met¹⁰ Ile¹¹ Gly¹² Thr¹³ Asp¹⁴ Ala¹⁵
Phe²⁰ Gln²¹ Glu²² Thr²³ Pro²⁴ Ile²⁵ Val²⁶ Glu²⁷ Val²⁸ Thr²⁹ Arg³⁰ Ser³¹ Ile³² Thr³³ Lys³⁴